

REMARKS/ARGUMENTS

Claims 1-7, 10-17 and 20-30 are now in this application. Claims 8-9 and 18-19 have been cancelled, and new Claims 27-30 have been added, by this Amendment, as further discussed below.

A Declaration under 37 C.F.R. 1.132 of the inventor Dr. Jameel Ahmad (“the Ahmad Declaration”) is also filed with this Amendment.

DRAWING OBJECTIONS

Replacement Figure 1 is provided with this response to overcome the Examiner’s objections to the drawing. This replacement drawing is labeled “Replacement Page” in the page header.

REJECTIONS UNDER 35 U.S.C. 103

Claims 1-10 have been finally rejected under 35 U.S.C. 103 as obvious in view of U.S. Patent No. 5,248,122 (Graham). Graham is directed to providing a pre-attached form system for an insulated structural wall panel. More particularly, Graham employs a structural reinforcing grid to which the form is attached, and concrete is placed within the grid spaces. *See* col. 3, lines 5-10. As depicted in Figure 2, vertical member (31) and horizontal member (32) are made up of steel rods (33, 34, 35, 36) and bar ties (37) to form a “rigid, monolithic, reinforcing system” Col. 3, line 61- col. 4, line 12. As depicted in Figure 3, steel rods (35, 36) are embedded in the upper and lower portions of concrete panel (10). However, as shown in Figure 3, the steel rods (35, 36) are not placed throughout concrete panel (10). Accordingly, Graham discloses a conventional “open-loop” reinforcement system, as depicted, for example, in Figure 1 and described in Para. [0019] of this application. *See* Ahmad Declaration, Para. 6.

In contrast, the invention claimed in this application is a “closed-loop” multi-layered, membrane-like system in which the mesh structure loops around continuously without end points or end boundaries, and extends throughout the concrete fill material, as depicted, for example, in Figures 2 and 2A of this application. The individual wires have no bending strength; instead, the reinforcing structure of the invention derives its resistance through “membrane” action-analogous to the way a “sack of potatoes” is able to hold potatoes even though the walls of the sack have no bending strength. Because each wire mesh cell of the reinforcing structure is continuously connected to other cells, the closed-loop multi-layered membrane structure that is thus formed is capable of developing “hoop” stresses and multi-layered “membrane” action to absorb the explosive energy released by the shock wave of a blast load. *See* Ahmad Declaration, Para. 8.

Upon being hit by the shock wave generated from the blast load, the closed-loop membrane structure of this invention absorbs the energy of the shock wave by stretching like a membrane while containing the concrete fragments for a few milliseconds until the

shock wave has passed (shock waves typically have durations in the range of a few milliseconds). *See Ahmad Declaration, Para. 10.*

However, the “open-loop” system of Graham cannot contain such concrete fragments, because the steel rods (35, 36), vertical members (31) and horizontal members (32) are only located around the perimeter of concrete panel (10). *See Ahmad Declaration, Para. 10.* In fact, the Examiner has acknowledged that Graham does not disclose the mesh structure extending throughout the entire fill material. *See Final Office Action, p. 3.*

Nevertheless, the Examiner’s position is that it would have been obvious to one of ordinary skill in the art, in view of the disclosure of Graham of the location of the steel rods, vertical members and horizontal members only around the perimeter, to “comprise the mesh structure extending throughout the entire fill material to create a wall that can withstand larger loads....” *See Final Office Action, p. 3.* However, it is respectfully submitted that the Examiner’s assertion is incorrect for the following reasons.

As a threshold matter, it is respectfully submitted that the Examiner has failed to establish a case of *prima facie* obviousness. The mere fact that references can be modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the modification. See MPEP § 2143.01 at p. 2100-131 (Rev. 2 May 2004) (citing *In re Mills*, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990)). Despite the Examiner’s bare assertion to the contrary, nothing in Graham suggests the use of mesh structure extending throughout the entire fill material. Instead, Graham describes a structural reinforcing grid (30) framing in a number of insulation panel assemblies 60, all surrounded by a monolithic concrete casing (90). *See* col. 3, lines 43-46.

In addition, one of ordinary skill in the art would not look to the “open-loop” system of Graham to solve the problem addressed by the “closed-loop” structure of the claimed invention: i.e., absorption of the energy associated with the shock wave caused by the blast load, and the containment of the flying concrete aggregate material shattered by the shock wave. The Graham system is designed to be active and responsive to a normal load (i.e., the weight of a building or overlying structure). In contrast, the claimed invention is intended to act as a sacrificial member in response to a blast load; accordingly, the claimed invention is not active or responsive to a normal load. Instead, the closed-loop structure of the claimed invention is only active and responsive to a blast load. *See Ahmad Declaration, Para. 11.* Moreover, the open-loop system of Graham cannot translate the blast load into a deflection, because there is no mesh structure within the interior portion of the concrete wall in Graham. *See Ahmad Declaration, Para. 12.*

In view of the foregoing, it is respectfully submitted that Claims 1-10 are nonobvious and patentable over Graham.

Claims 11-26 have been rejected under 35 U.S.C. 103 as obvious in view of Graham in combination with U.S. Patent No. 5,335,472 (Phillips). Phillips is directed to a reinforced concrete prefabricated module for use in the construction of reinforced concrete buildings. As depicted in Figure 5, the module (24) contains an outer metal

frame (48), insulation layer (56) and wire mesh layers (58). *See* col. 4, lines 7-15. As shown in Figure 7, a wire mesh layer (53A) may be secured to the outer corner support member (62A). *See* col. 5, lines 9-25. However, the wire mesh layers (58 or 53A) do not extend throughout the entire fill material. *See* Ahmad Declaration, Para. 7. As discussed above, the “closed-loop” system of the present invention is distinguishable from the “open-loop” system of Graham. In view of the forgoing, it is respectfully submitted that Claims 11-26 are nonobvious and patentable over Graham in combination with Phillips.

NEW CLAIMS

New Claims 27-30 have been added to further describe this invention. New Claim 27 incorporates the limitations of Claim 1 and now cancelled Claims 8-9. New Claim 28 incorporates the limitations of Claim 11 and now cancelled Claims 18-19. New Claims 29-30 incorporate the limitations of Claims 1 and 11, respectively, and the disclosure of Paras. [0027]-[0029] of the specification. Accordingly, it is respectfully submitted that no issue of new matter is presented by any of new Claims 27-30.

New Claims 27 and 28 specify that the claimed protective structure undergoes a deflection of 25% or less of the length of the protective structure in response to a blast load. The Examiner has previously asserted that the “open-loop” structure of Graham would be capable of deflecting 25% or less of the length of the structure. (Final Office Action, p. 4). However, the Examiner has provided no technical basis for this assertion. Moreover, as previously discussed, the “open-loop” system of Graham is not configured to translate the blast load into a deflection, because there is no mesh structure within the interior portion of the concrete wall in Graham. *See* Ahmad Declaration, Para. 12. Accordingly, it is respectfully submitted that new Claims 27-28 are patentable over the prior art.

New Claims 29-30 specify that the mesh structure has a time period of oscillation T in response to the blast load, the blast load has a time duration of t_d , and T is 5-20 times greater than t_d . Because the oscillation period of the mesh structure is much longer than the duration of the blast load, the mesh structure is able to absorb a large portion of the energy released by the blast load without failing, thereby saving the mesh structure to capture flying aggregate concrete material. *See* Ahmad Declaration, Para. 9. Neither Graham nor Philips disclose or suggest such a relationship between T and t_d . Accordingly, it is respectfully submitted that new Claims 29-30 are patentable over the prior art.

CONCLUSION

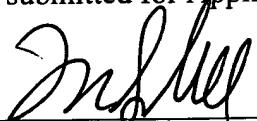
Based on the foregoing amendments and remarks, favorable consideration and allowance of all of the claims now present in the application are respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawings be further amended or corrected in formal respects in order to place the case in condition for final allowance, then it is respectfully requested that such amendment or

correction be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, the Examiner is invited to telephone the undersigned.

The Commissioner is authorized to charge any required fees, including any extension and/or excess claim fees, any additional fees, or credit any overpayment, to Goodwin Procter LLP Deposit Account No. 06-0923.

Respectfully submitted for Applicant,



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